



State of Ohio Environmental Protection Agency

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June 18, 2002

Mr. Johnny Reising
U.S. Department of Energy, Fernald Area Office
P.O. Box 538705
Cincinnati, OH 45253-8705

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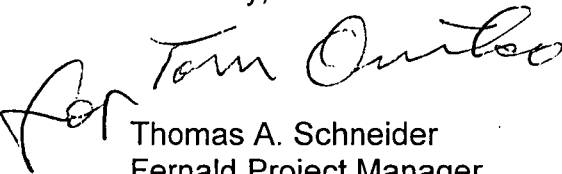
RE: COMMENTS SOUTH FIELD PHASE II DESIGN FOR REMEDIATION OF THE GMA

Dear Mr. Reising:

This letter provides Ohio Environmental Protection Agency comments on the Design for the Remediation of the Great Miami Aquifer South Field Phase II Module.

Should you have any questions, please contact Tom Ontko or me.

Sincerely,



Thomas A. Schneider
Fernald Project Manager
Office of Federal Facilities Oversight

cc: Jim Saric, U.S. EPA
Terry Hagen, Fluor Fernald
Mark Shupe, GeoTrans, Inc.
Mary Wójciewski, Tetra Tech EM Inc.
Ruth Vandergrift, ODH

Enclosure

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- 1) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 2.0 Pg. #: 2-7 Line #: 15 Code: C
Comment: The noted concentration reductions may be, at least partially, a seasonal artifact. The first bullet item should note that locally, higher uranium concentrations may be observed in the future as a result of a higher water table level. As noted in the next bullet and in the cross section discussions, site evidence suggests that uranium desorption from sediments above the current water table may result in increased concentrations under high water table conditions.
- 2) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg. #: 3-2 Line #: 7 Code: C
Comment: This statement needs the qualification that it is based on the assumption of a linear kd. The potential for concentration rebound and, therefore, a longer than simulated cleanup time, should be noted.
- 3) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg. #: 3-3 Line #: 1 Code: C
Comment: Additional details (e.g., specific borings used, geologic descriptions of the low conductivity material versus the surrounding higher conductivity material, evidence obtained from direct excavation versus evidence from borings, etc) regarding the rationale for defining the low conductivity zone, both laterally and vertically, should be provided to document the definition of this zone in the model. How are the 200 ft/day horizontal and 34 ft/day vertical hydraulic conductivity values justified? What sediment samples were used? The term sediment at the site usually denotes unconsolidated material that is transported in surface water and has recently been deposited.
- 4) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg. #: Figure 3-7 Line #: NA Code: C
Comment: The solid line on this figure is labeled as "Post-Excavation Limit of Glacial Till." It is unclear what the meaning of this line is south of the zero thickness till contour (i.e., no till was originally present south of the zero contour).
- 5) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg. #: 3-4 Line #: 12 Code: C
Comment: Either the text or Figure 3-9 should note which model layer was used in the comparison.
- 6) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg. #: 3-4 Line #: 18 Code: C
Comment: The referenced text discusses the flow model simulation results for the current operational scenario (i.e., existing wells plus the additional re-injection and extraction wells proposed in the South Field Phase II Design). Please include in this report

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(and in future reports that document modeling activity in support of the groundwater remediation) the model layers and apportioned flows for all existing and proposed extraction and re-injection wells.

- 7) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg.#: 3-4 Line #: 18 Code: C
Comment: A useful addition to the report would be a figure showing the un-retarded particle tracking results shown in relation to the total plume footprint. Also, a figure showing the un-retarded particle tracking results for a selected cross section is also recommended. These figures would provide an indication of the overall capture zone for the design. The six-year retarded particle tracks shown on the figures referenced in Section 3.4.3 are potentially misleading because they are subject to uncertainties regarding the proper partitioning coefficient that is appropriate for the cleanup time frame.
- 8) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg.#: 3-5 Line #: 14 Code: C
Comment: The report should provide discussion and justification for use of the variogram parameters for the current data set. The current concentration data set differs significantly in detail from the data set kriged in the referenced 1994 document because of the addition of the substantial amount of drive point data. The current data set more closely resembles data set evaluated for the conceptual design for groundwater remediation in the waste storage and Plant 6 areas. The variogram ranges for the current analysis differ significantly from those used previously (3000 vs. 500 feet for horizontal; 60 vs. 25 feet for vertical, respectively). The use of the dataset-specific geostatistical analysis for the waste storage and Plant 6 areas design is more appropriate than simply adopting variography previously developed for a more limited site wide data set.
- 9) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg.#: 3-5 Line #: 14 Code: C
Comment: The report should indicate how the kriging results were assigned to the transport model nodes.
- 10) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg.#: 3-5 Line #: 14 Code: C
Comment: The report should compare the initial dissolved and adsorbed masses computed by kriging versus the mass amounts initialized in the VAM transport model.
- 11) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg.#: 3-6 Line #: 1 Code: C
Comment: Figures 22 through 26 show the particle tracking results for each model layer. The particle tracks appear to be identical from layer to layer. Some of the extraction wells,

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however, are not completed in every layer. At least some differences in the tracks, thus, would be expected. Are these figures correct?

- 12) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.4.3 Pg. #: 3-6 Line #: 1 Code: C
Comment: The particle tracks shown in many cases do not capture the entire plume in each layer. Table 3-3 provides an estimation of the amount of mass extracted each year by the South Field and South Plume modules. In addition to these estimates, the report should indicate the cumulative mass balance for the time when the plume is remediated to below the FRL. Specifically, the modeled amounts of mass sorbed on the aquifer grains, dissolved in groundwater, and discharged by offsite groundwater flow should also be provided.
- 13) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.4.3 Pg. #: 3-10 Line #: NA Code: C
Comment: The results presented in this table are difficult to interpret. What is meant by the term "Module Concentration" and how was this parameter calculated? Presumably it is a flow-weighted average concentration, but this is not stated in the accompanying text.
- 14) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 4.0 Pg. #: 4-1 Line #: 35 Code: C
Comment: The text should qualify conclusions regarding the predicted time required to reduce total uranium concentrations to below-FRL levels. The time frame for completion of the remediation may be substantially greater because of distribution coefficient uncertainties.